



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,635	11/19/2003	Derek Seeber	650265.00006	6446
26710	7590	07/05/2006	EXAMINER	
QUARLES & BRADY LLP 411 E. WISCONSIN AVENUE SUITE 2040 MILWAUKEE, WI 53202-4497			HORWAT, JENNIFER A	
			ART UNIT	PAPER NUMBER
			3768	

DATE MAILED: 07/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/716,635

Applicant(s)

SEEBER, DEREK

Examiner

Jennifer Horwat

Art Unit

3768

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 5, 8, and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 5, 8, and 16 recite the limitation "the accelerometer" in the claims, however no mention to an accelerometer is mentioned previously in the claim or a claim upon which the above-mentioned claims are dependant. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 6, 9, 11, 12, 14, 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Eviatar, et al (US 2002/0118373). Eviatar discloses a system for detecting movement of a subject during magnetic resonance imaging including a coil (fig. 1) which includes an RF coil to detect signals from the sample caused by nuclear magnetic resonance (paragraph 39) in which a motion detection system is arranged

Art Unit: 3768

within the coil to detect motion of the head of a patient (paragraph 42). The system includes a light emitting device (paragraph 46) for monitoring motion of the subject. The motion signals are used to compensate for the movement to provide imaging information that is independent of subject movement (paragraph 59). The gradient pulse sequence may be modified by a pulse programmer to allow for acquisition correction (paragraph 136).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3, 4, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eviatar in view of Rogers, Jr. (US 5477144) and further in view of Morris, Sr., et al (US 6148229). Eviatar, as discussed above, substantially discloses the invention as claimed. For those limitations not previously discussed, Eviatar additionally discloses that the motion correction system is attached to the subject's head including the use of flexible straps to aid in attachment (paragraph 96). However, Eviatar does not disclose that the motion detection system consists of an accelerometer. Rogers also discloses a method for reducing image artifacts in magnetic resonance images and further discloses the use of an accelerometer to measure motion (col 5, lines 63-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify

Art Unit: 3768

the disclosure of Eviatar in light of the disclosure of Rogers to include an accelerometer, as an accelerometer would provide motion detection of the subject directly without the use of a separate optical subsystem, as used by Rogers. The accelerometer placed directly on the subject, as disclosed by Rogers, would remove the need for calibration of the optical system.

7. Claim 5, 7, 8, 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eviatar in view of Rogers and further in view of Morris, Sr., et al (US 6148229). The modified device of Eviatar in view of Rogers, as discussed above, substantially discloses the invention as claimed, however fails to explicitly disclose the use of optical fibers for transmission of the motion signal. Morris discloses a system for compensating for motion artifacts in magnetic resonance imaging and further discloses that the use of optical fibers for signal transmission is well known in the imaging art. Morris discloses the use of several fiber optic cables for transmission of motion signal as a preferred embodiment (col 7, lines 56-67). Further, it is inherent within an accelerometer that power may be received from a photovoltaic device (as evidenced by US 3527106). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Eviatar in view of Rogers further in light of the disclosure of Morris, as Morris teaches the preferential use of optical fibers for transmission of motion signals, as they provide fast transmission and are capable of use in a strong magnetic field environment, as in an MRI system.

8. Claims 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eviatar in view of Bornert, et al (US 5977769). Eviatar, as discussed above,

substantially discloses the invention as claimed, however fails to explicitly disclose the use of indication of motion above a threshold. Bornert discloses an MR method with reduced motion artifacts and further discloses that reconstruction of an MR image which uses only signals acquired when displacement from a reference position is below a threshold value (abstract). When displacement exceeds the threshold value, MR signals are no longer acquired, and therefore the signal is off or zero, during these periods (col 1, lines 62-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Eviatar in light of the disclosure of Bornert to zero signals when motion is above a threshold to reduce the incidence of motion artifact in the image, as disclosed by Bornert.

9. Claims 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rogers, Jr. (US 5477144) in view of Morris, Sr., et al (US 6148229). Rogers discloses a method for reducing image artifacts in magnetic resonance images and further discloses the use of an accelerometer to measure motion (col 5, lines 63-65) that is attached by a strap to the chest of a patient. However, Rogers fails to disclose the use of optical fibers. Morris discloses a system for compensating for motion artifacts in magnetic resonance imaging and further discloses that the use of optical fibers for signal transmission is well known in the imaging art. Morris discloses the use of several fiber optic cables for transmission of motion signal as a preferred embodiment (col 7, lines 56-67). A fiber optic cable provides a light emitting device for transmitting the motion signal as a light signal. Further, it is inherent within an accelerometer that power may be received from a photovoltaic device (as evidenced by US 3527106). It would

have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Rogers in light of the disclosure of Morris, as Morris teaches the preferential use of optical fibers for transmission of motion signals, as they provide fast transmission and are capable of use in a strong magnetic field environment, as in an MRI system.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ben-Ari and Mugler, III et al teach devices of note.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Horwat whose telephone number is (571) 272-2811. The examiner can normally be reached on M-Th 7-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eleni Mantis-Mercader can be reached on (571) 272-4740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3768

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jah
6/22/06


BRIAN L. CASLER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700